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AUTHOR Levine, Michael M.
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ABSTRACT

Recent events in behavior modification stimulated application of communication theory to teacher behavior and classroom management. For the purposes of this present investigation, it was assumed that criteria of effective communication are highly dependent on the phenomena of redundancy and consistency, which are both of major importance in any discussion of communication. Consistency is related to the behavior of the communicator, while redundancy pertains to the informational contents of the message itself. Redundancy is both necessary and sufficient for the existence of effective communication because its existence implies both the presence of excess information and a shored communication system build up over a period of time. Primary subjects of the observation were three kindergarten teachers. The teachers were given feedback on the first period and were asked to follow these instructions to become more redundant communicators. Results indicated that on a theoretical level communication theory does provide a valuable alternative paradigm to the operant model used in behavior modification studies. On a pragmatic level results indicated that A/O (attending and orientation) behaviors may be somewhat less important than was previously considered. (Tables are appended.) (JA)

The role of redundancy in the assessment of the effectiveness of teacher communication.

Michael M. Levine
Bloomsburg State College
Bloomsburg, Pa.

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Application of communication theory to teacher behavior and classroom management was stimulated by recent events in behavior modification. The general nature of teachers' communication patterns was recorded using multiple baselines. Effectiveness and ineffectiveness of communication patterns was shown to be determined primarily by the amount of redundancy in the messages.

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Introduction

Recent publications have provided a substantial number of theoretical approaches which have been used in attempts to explain (and remedy) many common classroom problems. In general, such approaches have concentrated on specific problems (e.g.: tantrums) and do not seem to be readily applicable to the large number of (often simultaneously occurring) problems that often confront the teacher (e.g.: ensuring that students understand directions). Such approaches have usually been concerned almost entirely with student behavior and, as a result, have provided little information relevant to numerous other aspects of the educational process (e.g.: assessment of teacher effectiveness).

Some of the more promising approaches at the present time are those based on the operant conditioning paradigm. It should be noted that such studies do not appear to be directly focussed on an understanding of the communication process.

There are, of course, many alternatives and supplements to the operant conditioning approach. One of these can be found in communication theory. Though investigations based on this orientation have not been primarily concerned with the classroom, their findings may nevertheless be highly applicable. A

SP 006 647

basic advantage or value of communication theory (CT) as a supplement or alternative to operant approaches lies, in part, in the similarity of both which enables CT to deal with most/all of the problems which the latter deals with. At the same time, CT's divergent position also allows it to deal with many other problems which the operant approaches either cannot or have not yet begun to deal with.

For the purposes of the present investigation it is assumed that criteria of effective communication are highly dependent on the phenomena of redundancy and consistency which are of major importance in any discussion of communication. Redundancy has been defined in a variety of ways. For example, Miller (1963) has defined it as repeated information. Bateson (1963), using the synonym 'patterning', has pointed out both a technical as well as a practical usage of the term and it is this conceptual framework that has been extended to draw the distinction between consistency and redundancy. Consistency is related to the behavior of the communicator. Behavior is consistent to the extent that the communicator performs in the same manner, in similar situations, while trying to convey the same ideas.

In contrast to consistency, redundancy pertains to the informational components of the message itself. One might, in fact, define redundancy as the 'internal consistency of the message'. Without consistency, redundancy is impossible since it develops only after a period of time during which the communicational behaviors have been performed. However, while consistency is a necessary condition for the development of redundancy, it is not sufficient. In addition to consistent communicational behavior, a shared communications system is also required.

At the same time, redundancy is both necessary and sufficient for the existence of effective communication. The existence of redundancy implies both the presence of 'excess information' and a shared communication system, built up over a period of time (e.g.: drivers will stop for an obscured stop sign).

It seems most profitable for research which is aimed at the clarification of

teacher-student relationships to begin with simpler behaviors (and/or patterns) which can be accurately and precisely defined and then to consider teacher effectiveness in terms of the redundancy or specific patterns of behavior that comprise 'style and technique'. Since communication cannot be directly observed (because it is a process), it can be and must be inferred from observed behaviors. It is also assumed that all behavior communicates some message to the receiver, and that effective communication has occurred when the teacher's behavior results in a reliable, corresponding change in the behavior of the student.

Of the potentially large number of data points on which a definition of effective communication could be built in a manner consistent with CT, a few would suggest themselves on both pragmatic and theoretical bases. The most obvious of these effectiveness criteria would be a change in the frequency and latency of appropriate (A), inappropriate (I), and no response (N) behaviors as a result of redundancy. In addition, changes in the frequency and latency of 'attending and orienting behaviors also seems of major importance. In other words, as communications become more redundant, it would be expected that this would be reflected in terms of an increase in A frequency, a decrease in A and I latency, and an increase in A/O as well as a decreased latency of these A/O behaviors.

Methodology

'Primary subjects' were three kindergarden teachers at the Kaneohe Elementary School (Kaneohe, Hawaii). 'Secondary subjects' were the children who comprised the classes taught by the three teachers.

Observers were upper-level psychology majors at the University of Hawaii, who received between thirty-five and forty hours of training in behavioral observation techniques (concentrating on the coding system developed by the author). Observations were made during the entire school week beginning with the start of

classes until the mid-morning juice break (approximately one and one-half hours daily). Observers did their recording in pairs (but were placed in different sections of the room so as to preclude possible sources of confounding) and were rotated from teacher to teacher on a day-to-day basis.

The coding system involved the recording of three distinct sets of data (i.e.: context of the communication, teacher behavior and childrens' responses to the teachers' communications). Context was directed toward the nature of the child's behavior immediately prior to the teacher's communication to that child. Teacher behavior was divided into three major components (i.e.: verbal, vocal and nonverbal behaviors), each of which had several subcategories within it. Student responses to the teacher's communication were categorized in terms of: (1) whether or not A/O behaviors occurred (e.g.: facial orientation); (2) the latency of such A/O behaviors as occurred; (3) the nature of the child's actual response (i.e.: A,I or N behaviors); and (4) the latency and frequency of A and I responses.

Observer reliability (using the conservative approach suggested by Bijou, Peterson, etal., 1969) was found to be 94.81% for the data collected during the entire study.

In all other respects the typical functional-analysis (ABAB) format was followed. The teachers were given feedback based on the 'first baseline period' and asked to follow these instructions so as to become better (more redundant) communicators. In addition, the teachers were asked to return to their previous behaviors (second baseline) and again to the new behaviors (second modification).

Results and Discussion

Data analysis took two different directions. Initially, analyses were directed toward establishing that some change did occur across observation periods in relation to both frequency and latency of A/O behaviors as well as the actual

A, I and N responses. These analyses showed that while some change did occur in relation to A/O, such changes were not consistant. However, changes pertaining to A/I/N were highly consistant as well as statistically significant (see Table 1)

The second set of analyses were directed toward establishing the validity of a communications approach relying heavily on redundancy. Analyses showed there was no effect of redundancy on either frequency or latency of A/O but that change in student A/I/N behavior was clearly due in large part to the amount of redundancy within the messages of the three teachers.

On a theoretical level, the analyses indicate that communication theory does provide a valuable and viable alternative paradigm (or supplement to) the operant model which has been used almost exclusively in behavior modification studies. It should be noted that the communications approach emphasizes the context of the communication somewhat more than the learning paradigm and also stresses the importance of the amount of redundancy in the message itself- an idea that has received little attention in behavioral research to date. An additional difference is due to the fact that the communications model addresses itself to the message itself while the social learning approach is more concerned with the effect of the message.

On a pragmatic level the data indicate that A/O behaviors may be somewhat less important than has been previously considered. However, it may be that a nonlinear relationship exists between the amount of redundancy in the message and both frequency and latency of A/O.

Finally, the data also suggests that teacher effectiveness in the classroom may be more profitable assessed by the use of behavioral indices such as those discussed as opposed to the more traditional criteria as end of year/semester exams, evaluation by school authorities, etc. Assessment of this type could be instrumental in the improvement of the educational system at its most important point, the teacher.

TABLE 1. SUMMARY OF ANALYSES RELATED TO CHANGES IN STUDENT RESPONSES TO TEACHER COMMUNICATIONS (ACROSS OBSERVATION PERIODS)

Student Response to:	Student Behavior			
	Attending & Orienting *		Nature of Response @	
	frequency	latency	frequency	latency
Teacher A	sig. .05		sig. .05	sig. .01
Teacher B			sig. .05	
Teacher C	sig. .05	sig. .05	sig. .05	sig. .01

* Frequency pertains to occurance and nonoccurance of A/O while latency is only related to the cases in which A/O did occur.

@ Frequency pertains to occurance of appropriate, inappropriate and no responses to communication. Latency refers only to latency of appropriate responses.

TABLE 2. SIGNIFICANCE OF CHANGE IN STUDENT RESPONSE AS A FUNCTION OF THE AMOUNT OF REDUNDANCY IN THE MESSAGE #

Student Response to	Student Behavior			
	Attending & Orienting *		Nature of Response @	
	frequency	latency	frequency	latency
Teacher A			sig. .05	sig. .05
Teacher B			sig. .05	sig. .01
Teacher C			sig. .02	sig. .01

\# Redundancy has been equated with the number of times a message was repeated in the same context.

* Frequency pertains to occurance and nonoccurance of A/O while latency is only related to those cases in which A/O did occur.

@ Frequency pertains to occurance of appropriate, inappropriate and no responses to communication. Latency refers only to appropriate responses.